

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
AND
U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX**

**FACT SHEET
for the
E. W. BLOM POINT LOMA METROPOLITAN WASTEWATER TREATMENT
PLANT
DISCHARGE TO THE PACIFIC OCEAN
THROUGH THE POINT LOMA OCEAN OUTFALL
SAN DIEGO COUNTY**

**ORDER NO. R9-2002-0025
NPDES PERMIT NO. CA0107409**

SUMMARY

On February 11, 2002, the U. S. Environmental Protection Agency, Region IX (hereinafter USEPA) tentatively decided to grant a modification from secondary treatment requirements of the Clean Water Act (CWA) to the City of San Diego (hereinafter discharger) for the E. W. Blom Point Loma Metropolitan Wastewater Treatment Plant (PLMWTP) discharge to waters of the Pacific Ocean through the Point Loma Ocean Outfall (PLOO). In accordance with this decision, and the authorities vested in Section 402 of the CWA, USEPA is issuing a final 301(h)-modified National Pollutant Discharge Elimination System (NPDES) permit that incorporates this tentative decision. The PLOO discharges beyond the 3-mile State waters limit to federal waters. Therefore, USEPA has primary regulatory responsibility for the discharge; however, in 1984 a Memorandum of Understanding was signed between USEPA and the State of California to jointly issue and administer discharges that are granted modifications from secondary treatment requirements. Under California's Porter-Cologne Water Quality Control Act, the California Regional Water Quality Control Board issues waste discharge requirements which serve as the NPDES permit. On February 11, 2002, the USEPA and California Regional Water Quality Control Board, San Diego Region (hereinafter Regional Board) jointly proposed issuance of a draft 301(h)-modified NPDES permit incorporating both federal NPDES requirements and State waste discharge requirements.

ADMINISTRATIVE PROCESS

The administrative processing of a Section 301(h) modification application consists of the following actions:

1. Filing of a timely and complete application;
2. Initial screening of the application by the State and USEPA;

3. USEPA preparation of a Tentative Decision Document (TDD) which involves comparison of the application with criteria set forth in the statute and regulations;
4. USEPA staff recommendation that the USEPA Regional Administrator (hereinafter Regional Administrator) sign the TDD;
5. Announcement of the tentative decision by the Regional Administrator;
6. Public notice of a draft 301(h)-modified NPDES permit incorporating the tentative decision;
7. Public hearings to address public interest;
8. State concurrence in the granting of a 301(h) modification through State and USEPA joint issuance of a 301(h)-modified NPDES permit; or denial by the State and/or the Regional Administrator.
9. Processing of appeals, in accordance with 40 CFR 124.12.

TENTATIVE DECISION

On April 10, 2001, the discharger submitted an application for renewal of its 1995 301(h)-modified NPDES permit. This application was based on an improved discharge, as defined at 40 CFR 125.58(g). In this application, the discharger proposed the following effluent limitations:

Effluent Parameter	Mean Annual Percent Removal	Mean Monthly Percent Removal	Annual Mass Emission (effective year 5 of NPDES permit)	Daily Range
Total Suspended Solids (TSS)	N/A	≥ 80%	13,599 mt/yr 82,100 lb/day	N/A
5-Day Biochemical Oxygen Demand (BOD ₅)	≥ 58%	N/A	N/A	N/A
PH	N/A	N/A	N/A	6-9

mt/yr = metric tons per year
lb/day = pounds per day
N/A = not applicable

The discharger proposed that percent removal for TSS and BOD₅ be computed on a "system-wide" basis. By computing percent removal on a system-wide basis, the discharger receives credit for TSS and BOD₅ removal achieved as part of upstream water reclamation operations. The USEPA drafted a TDD evaluating the proposed 301(h)-modified discharge based on 1995 through 2000 effluent concentrations for TSS and BOD₅ and the discharger's projected end-of-permit flow of 195 million gallons per day (MGD) (maximum dry season monthly average daily

discharge flow), as provided in the application. The USEPA used the following CWA criteria to evaluate the discharger's modification request. These criteria require that:

1. The discharge maintains a balanced indigenous population of fish, shellfish and wildlife, and allows recreational activities;
2. A practicable program to monitor potential impacts of the ocean discharge be implemented;
3. The discharge not result in additional requirements on any other pollution source;
4. The discharge meets State water quality standards;
5. All applicable pretreatment requirements be enforced;
6. An urban area pretreatment program be implemented or secondary equivalency of toxics removal be demonstrated;
7. A program to reduce toxics from non-industrial sources be implemented;
8. The total pollutants discharged will not exceed permit limitations; and
9. The discharge will at minimum meet primary treatment standards and meet water quality criteria after initial mixing.

In addition, the discharger will also achieve:

1. 80 percent removal of TSS on a system-wide monthly average;
2. 58 percent removal of BOD₅ on a system-wide annual average;
3. 45 MGD of water reclamation capacity by the year 2010; and
4. Reduction of TSS discharged into the ocean during the period of permit modification.

The USEPA found that the discharger's application satisfies these CWA provisions. The Regional Administrator's tentative decision grants the discharger's modification request for the following parameters: TSS and BOD₅. The TDD is incorporated, herein, by reference, as part of this fact sheet. This fact sheet and the TDD set forth the principal facts and significant legal, methodological, and policy questions considered in the development of the 301(h)-modified NPDES permit. The 301(h)-modified NPDES permit is based on the Administrative Record.

SERVICE AREA DESCRIPTION

The Metropolitan Sewerage System (Metro System) is owned and operated by the discharger. The Metro System presently serves all or portions of the City of San Diego and 15 other cities and water/sanitation districts (participating agencies). In addition, there is a cross-border emergency connection between the Metro System and the City of Tijuana, Mexico. The service area encompasses approximately 450 square miles. The institutional arrangements between the discharger and the participating agencies are defined by a number of Sewage Disposal Agreements, Sewage Transportation Agreements, and various amendments to these agreements. The 15 participating agencies are:

Cities	Water/Sanitation Districts
City of Chula Vista	Lakeside-Alpine Sanitation District
City of Coronado	Lemon Grove Sanitation District
City of Del Mar	East Otay Mesa Sewer Maintenance Dist.
City of El Cajon	Otay Water District
City of Imperial Beach	Spring Valley Sanitation District
City of La Mesa	Padre Dam Municipal Water District
City of National City	Wintergardens Sewer Maintenance District
City of Poway	

Total raw wastewater generated within the Metro System service area is collected and transported via a network of trunk sewers, interceptor sewers and pump stations. The backbone of the Metro System consists of the North Metro Interceptor (NMI) (2.4 mile, 96 inch diameter sewer), the South Metro Interceptor (SMI) (1 mile, 78 inch diameter sewer; 2.1 mile, 84 inch diameter crosstown tunnel; 0.3 mile, 102 inch diameter sewer, and 1.7 mile, 108 inch diameter sewer), Pump Station No. 1 (PS1) and its force main (discharging wastewater to the SMI through a 1.6 mile, 72 inch diameter force main), and Pump Station No. 2 (PS2) and its two force mains (discharging wastewater to the Point Loma Tunnel and Interceptor Sewer). The total raw wastewater generated within the Metro System service area is pumped from PS2 via the two PS2 force mains and the Point Loma Tunnel and Interceptor Sewer to the PLMWTP Headworks for treatment at PLMWTP and final effluent disposal through the PLOO.

TREATMENT FACILITIES

There have been a number of upgrades to the Metro System since 1995. These include: (1) the addition of two new sedimentation basins at the PLMWTP; (2) construction of the Metro Biosolids Center (MBC); (3) construction of the North City Wastewater Reclamation Plant (NCWRP); and (4) construction of the South Bay Water Reclamation Plant (SBWRP).

Together, these facilities comprise the Metro System.

The PLMWTP is located at 1902 Gatchell Road, on the western side and near the southern tip of Point Loma in the City of San Diego. The facility site is located on the Fort Rosecrans military reservation and adjoins the Cabrillo National Monument. PLMWTP began operation in 1963. From 1963 through 1985, the plant operated as a primary treatment plant using gravity separation to reduce TSS levels by 60 percent prior to ocean discharge. In 1986, chemical coagulation was added to increase TSS removal to 75 percent.

Currently, preliminary treatment consists of course screening at Pump Station No. 2 and fine screening at the PLMWTP. The wastewater is then distributed to six aerated grit removal chambers. Ferric chloride is added prior to entering the grit chamber to enhance solids removal. Wastewater exiting the grit chamber is then treated with anionic polymers to aid coagulation of solids and distribution to 12 sedimentation tanks. The PLMWTP is capable of achieving at least 80 percent removal of suspended solids. Sludge generated by the advanced primary treatment process is digested anaerobically then pumped to the MBC for dewatering. Screening, grit, and scum are trucked to a landfill for disposal. Treated effluent is discharged to the Pacific Ocean through the PLOO. Rated capacity of the PLMWTP is 240 MGD average annual daily flow (AADF) and 432 MGD peak wet weather flow (PWWF).

The MBC, completed in 1998, replaced sludge dewatering operations at the now closed Fiesta Island Sludge Dewatering Facilities (FISDF). Digested sludge is pumped from the PLMWTP to MBC for processing. Recycled streams (centrate) from the dewatering processes at MBC are returned to the PLMWTP through the sewer system. In addition to dewatering of PLWTP sludge, MBC also provides thickening, anerobic digestion and dewatering facilities for sludge received from the NCWRP. The processed sludge from MBC is currently trucked to an approved landfill for disposal. The Executive Officer and USEPA Region IX Water Division Director must approve any change in the manner of disposal. MBC is subject to the terms and conditions of this Order and NPDES Permit.

Up to 30 MGD AADF of raw wastewater, which would otherwise be conveyed to the PLMWTP via the Rose Canyon Trunk Sewer (RCTS), is diverted to the NCWRP downstream of Pump Station No. 64. Treated effluent from the NCWRP is delivered to a reclaimed water distribution system. When reclaimed water production exceeds demand, excess NCWRP effluent is returned to the RCTS, retreated at the PLMWTP, and discharged through the PLOO. Undigested sludge is directed to MBC. Requirements for the discharge of reclaimed water from the NCWRP are established in Regional Board Order No. 97-03.

Up to 15 MGD AADF of raw wastewater, which would otherwise be conveyed to the PLMWTP via the upper reach of the SMI, will be diverted to the SBWRP via the South Bay Reclamation

Sewer Pump Station (SBRSPS) once the facilities are operational in mid-2002. A portion of the treated effluent from the SBWRP will be delivered to a reclaimed water distribution system and the excess will be discharged through the South Bay Ocean Outfall (SBOO). The SBWRP does not currently have onsite sludge handling capability. A pipeline will convey undigested sludge back to the SMI for treatment at the PLMWTP. Requirements for discharge from the SBWRP through the SBOO are established in Regional Board Order No. 2000-129, NDPEs Permit No. CA0109045. Requirements for the discharge of reclaimed water from the SBWRP are established in Regional Board Order No. 2000-203.

POINT LOMA OCEAN OUTFALL

The original PLOO was constructed in 1963 and consists of a 108 inch diameter reinforced concrete pipe extending 11,300 feet offshore to a wye diffuser at an approximate depth of 200 feet. From this wye, two diffuser legs extend approximately 1,368 feet north and south and terminate at a depth of approximately 220 feet below sea level. The PLOO was extended in 1993, when 12,500 feet of 144 inch diameter concrete pipe were added to the existing pipe. The new diffuser legs are each 2,500 feet long. The extended PLOO terminates at a point approximately 4.5 miles offshore at a depth of 310 feet (coordinates 32°39'55" North Latitude, 117°19'25" West Longitude). These coordinates indicate the location of the beginning of the extended outfall's diffuser structure. The outfall hydraulic capacity is 432 MGD (peak wet weather flow).

DISCHARGE DESCRIPTION

Treated wastewater discharged through the PLOO consists primarily of treated domestic sewage. Industrial flows contribute approximately three percent of the total Metro System flows. According to the discharger's application, the treated wastewater discharged to the Pacific Ocean through the PLOO has the following characteristics for TSS and BOD₅:

Parameter	Units	Annual Average (1999)
TSS	mg/l	38
BOD ₅	mg/l	102

BASIS FOR REQUIREMENTS

Section 402 of the CWA gives USEPA the authority to issue NPDES permits. Under Sections 301(h) and (j)(5) of the CWA, USEPA has the authority to grant a modification from secondary treatment requirements contained in Section 301(b)(1)(B) of the CWA.

The State Water Resources Control Board (hereinafter State Board) adopted a revised 2001 Water Quality Control Plan for Ocean Waters of California (Ocean Plan) on November 16, 2000. The 2001 Ocean Plan was approved by USEPA on December 3, 2001. The Ocean Plan identifies the following beneficial uses of State ocean waters to be protected:

1. Industrial water supply
2. Navigation
3. Water contact recreation
4. Non-contact water recreation
5. Ocean commercial and sport fishing
6. Preservation and enhancement of Areas of Special Biological Significance (ASBS)
7. Preservation of rare and endangered species
8. Marine habitat
9. Mariculture
10. Fish migration
11. Fish spawning
12. Shellfish harvesting
13. Aesthetic enjoyment

In order to protect these beneficial uses, the Ocean Plan establishes water quality objectives (for bacterial, physical, chemical, and biological characteristics, and for radioactivity), general requirements for management of waste discharged to the ocean, quality requirements for waste discharges (effluent quality requirements), discharge prohibitions, and general provisions.

The Water Quality Control Plan, San Diego Basin (9) (Basin Plan) was adopted by the Regional Board on September 8, 1994 and approved by the State Board. Subsequent revisions to the Basin Plan have also been adopted by the Regional Board and approved by the State Board. The Basin Plan identifies the following beneficial uses of State ocean waters to be protected:

1. Industrial service supply
2. Navigation
3. Water contact recreation
4. Noncontact water recreation
5. Commercial and sport fishing
6. Preservation of biological habitats of special significance
7. Rare, threatened, or endangered species
8. Marine habitat
9. Aquaculture
10. Migration of aquatic organisms
11. Spawning, reproduction, and/or early development
12. Shellfish harvesting
13. Wildlife habitat

The Basin Plan relies primarily on the requirements of the Ocean Plan for protection of these beneficial uses; however, the Basin Plan establishes additional water quality objectives for dissolved oxygen and pH.

This discharge must be in conformance with 40 CFR 131.12 and State Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California (known collectively as "antidegradation" policies). As the effluent concentration and mass emission rate limitations in this Order are the same as or more stringent than those in Order 95-106, except for differences due to rounding, significant figures, or revised calculations, adoption of this Order is consistent with antidegradation policies.

EFFLUENT LIMITATIONS

Effluent limitations, industrial pretreatment standards, sludge use and disposal regulations, and ocean discharge criteria established under Sections 208(b), 301, 302, 303(d), 304, 306, 307, 403, 405, and 503 of the CWA, and amendments thereto, are applicable to this discharge.

Effluent limitations for TSS and BOD₅ [see Discharge Specification B.1.a(1)] are shown below:

Effluent Parameter	Mean Annual Percent Removal	Mean Monthly Percent Removal	Monthly Average
TSS	N/A	≥ 80 *	75 mg/l
BOD ₅	≥ 58 *	N/A	N/A

* Percent removal to be calculated on a system-wide basis.

The discharger shall achieve a mass emission of TSS of no greater than 15,000 mt/yr through December 31, 2005. Effective January 1, 2006, the discharger shall achieve a mass emission of TSS of no greater than 13,599 mt/yr. PLOO mass emission requirements shall only apply to TSS discharged from POTWs that are owned and operated by the discharger, and the discharger's wastewater generated in the Metro System service area. PLOO mass emission requirements do not apply to wastewater (and the resulting TSS) generated in Mexico that may be treated at and discharged from POTWs in the U.S.

Percent removal limitations for TSS and BOD₅ are computed on a "system-wide" basis. By computing percent removal on a system-wide basis, the discharger receives credit for TSS and BOD₅ removal achieved as part of upstream water reclamation operations. The effluent

concentration limitation for TSS was determined based on PLMWTP monthly average performance data for 1993 through 1999 provided by the discharger. Effluent mass emission limitations for TSS were determined using the discharger's application; and the discharger's 2006 projected annual average effluent flow of 195 MGD and 80 percent removal of TSS. The final 301(h)-modified NPDES permit does not contain a concentration or mass emission effluent limitation for BOD₅ (see Administrative Record).

Effluent concentration limitations in Discharge Specification B.1.a(2) are the limiting concentrations specified in Table A of the Ocean Plan. Mass emission rates, where applicable, were determined using a flowrate of 205 MGD and the following equation specified in the Ocean Plan:

$$\text{MER} = 0.00834 \times C_e \times Q$$

where:

MER = mass emission rate in lb/day
C_e = the effluent concentration limitation in µg/l
Q = flowrate in MGD

The discharger used a modified version of the RSB model, in Dilution Models for Effluent Discharges (EPA/600/R-94/086, 1994), and the following characteristics of the ocean outfall diffuser system to estimate critical initial dilutions for determining effluent quality requirements:

<u>Outfall Characteristic</u>	<u>Value</u>
Outfall flowrate (peak wet weather flow)	432 MGD
Diffuser length (each leg)	2496 feet
Number of ports (per leg)	208
Port spacing	24 feet
Port diameters	
1008 foot section	3.75 inches at 7.0 feet
840 foot section	4.25 inches at 5.5 feet
648 foot section	4.75 inches at 4.0 feet
Port angle	5° below horizontal perpendicular to pipe

The discharger's modeling results were verified by USEPA, as outlined in the TDD. The critical initial dilution for determining compliance with the limiting concentrations specified in Table B of the Ocean Plan is 204:1 (i.e., minimum monthly average initial dilution). This is roughly twice the critical initial dilution calculated for the original PLOO (i.e., 113).

Effluent concentration limitations in Discharge Specifications B.1.b, c, and d are based on the limiting concentrations specified in Table B of the Ocean Plan, and were determined using a

minimum probable initial dilution (i.e., critical initial dilution) of 204:1 and the following equation specified in the Ocean Plan:

$$C_e = C_o + D_m (C_o - C_s)$$

where:

- C_e = the effluent concentration limitation in $\mu\text{g/l}$
- C_o = the concentration (water quality objective) to be met at the completion of initial dilution, $\mu\text{g/l}$
- D_m = the minimum probable initial dilution expressed as parts seawater per part wastewater
- C_s = background seawater concentration in $\mu\text{g/l}$

SYSTEM-WIDE PERCENT REMOVAL CALCULATIONS

On August 14, 1996, the discharger, in accordance with Order No. 95-106, NPDES No. CA0107409, submitted a system-wide percent removal calculation and schematic for TSS and BOD₅. On December 8, 2000, the discharger submitted a follow-up letter requesting modifications to the proposed schematic and calculations based on changes that occurred within the discharger's wastewater system as of that date. Both of these letters are available in the Regional Board public files.

Although the SBWRP will become operational during the term of this permit, it will not be part of the system-wide percent removal calculation because, as currently constructed, the facility does not have sludge disposal capabilities. When operational, the SBWRP will send sludge to the PLMWTP for solids removal and disposal at MBC. Therefore, no significant TSS or BOD₅ removal from the overall system occurs at the SBWRP. Once sludge handling and disposal facilities are available at the SBWRP, the system-wide calculation will be modified.

The system-wide percent removals of TSS and BOD₅ are calculated using the following formula (mass emissions in pounds):

$$\% \text{ Removal (TSS or BOD}_5\text{)} = \frac{(\text{System Influent} - \text{Return Streams}) - \text{Outfall Discharge}}{\text{System Influent} - \text{Return Streams}} \times 100$$

Where,

- System Influent = PLMWTP Influent, NCWRP Influent Pump Station, and NCWRP Influent from Penasquitos Pump Station.
- Return Streams = NCWRP Filter Backwash, NCWRP Plant Drain, NCWRP Secondary and Un-disinfected Filtered Effluent Bypass, NCWRP Final Effluent, and MBC Centrate

The TSS and BOD₅ concentration, together with flow rate, of each stream will be measured daily and a system-wide removal rate calculated according to the above formula. In the event that a flow rate measurement, TSS concentration, or BOD₅ concentration is not obtained from a stream, the median value for the previous calendar year for that stream will be used as a surrogate number to allow completion of the calculation. The discharger will be required to flag values where surrogate numbers are used in their self-monitoring reports submitted to the Regional Board. The failure to obtain a value may still be considered a violation of the permit that could result in enforcement action depending on the frequency of failures and efforts by the discharger to prevent such failures. Additional information regarding the discharger's wastewater treatment system, system-wide removal calculations, and overall system schematics is available in the Regional Board files.

EFFLUENT MASS EMISSION BENCHMARKS

To address the uncertainty due to projected increases in toxic pollutant loadings from the PLMWTP to the marine environment during the five-year waiver, and to establish a framework for evaluating the need for an antidegradation analysis to determine compliance with antidegradation requirements at the time of permit reissuance, mass emission benchmarks have been established for effluent discharged through the PLOO. These mass emission benchmarks are not water quality-based effluent limitations and are not enforceable, as such. These mass emission threshold values may be re-evaluated and modified during the permit term.

Annual mass emission benchmarks were determined using 1990 through April 1995 n-day average monthly performance (95th percentile) of the PLMWTP and the discharger's projected end-of-permit flow of 205 MGD. Due to increases in source water concentrations in the discharger's imported potable water supply, mass emission benchmarks for copper and selenium were determined using 1994 n-day average monthly performance (95th percentile) of the PLMWTP and the discharger's projected end-of-permit flow of 205 MGD:

$$\text{MER} = \text{Ce} \times \text{Q} \times 3.785 \text{ l/gal} \times 365 \text{ days/yr} \times 1 \text{ kg}/10^9 \mu\text{g} \times 1 \text{ mt}/10^3 \text{ kg}$$

where:

MER	= mass emission rate in mt/yr
Ce	= the n-day average monthly effluent concentration in $\mu\text{g/l}$
n	= number of days in the month (28-31 days)
Q	= flowrate in MGD

Average monthly performance was calculated using the equations specified in the Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001, 1991), Appendix E, Table E.2.

MONITORING AND REPORTING PROGRAM

To evaluate compliance with 301(h) requirements and State water quality standards, the Monitoring and Reporting Program (MRP) contained in this Order and NPDES Permit continues the existing program under Order No. 95-106, NPDES No. CA0107409 with minor changes. The MRP requires influent and effluent monitoring for conventional, non-conventional, and priority pollutants. Sludge monitoring, recordkeeping, and reporting requirements are consistent with 40 CFR 503. Pretreatment requirements are consistent with 40 CFR 403. Receiving environment monitoring requires receiving water sampling and analyses, benthic monitoring (sediment, infauna and fish monitoring), and kelp bed monitoring.

PROCEDURES FOR FINAL DECISION

On February 11, 2002, the USEPA and Regional Board notified the discharger and all known interested parties of their intent to jointly issue a 301(h)-modified NPDES permit and conduct a joint public hearing to take comment on these proposed actions. In accordance with 40 CFR 124.12, a public hearing is scheduled for March 13, 2002, 9:00 a.m., at the Regional Board office.

The Administrative Record, which includes the final 301(h)-modified NPDES permit and fact sheet, the draft 301(h)-modified NPDES permit and fact sheet, comments received and response to comments, permit application, 301(h) tentative decision, and other relevant documents are available for review at the addresses below. [Monday through Friday, between 9 a.m. and 5 p.m. at USEPA; and Monday, Tuesday, and Thursday at 1:30-4:30 p.m. and Tuesday, Wednesday, and Friday at 8:30-11:30 a.m. at the Regional Board, or call ahead to arrange other times.]

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When a final 301(h)-modified NPDES permit is issued, it will become effective 33 days following the date of signature by the USEPA Water Division Director, unless a petition is filed with the Environmental Appeals Board to review any condition of the permit decision. Those persons filing a petition must have filed comments on the draft or participated in the public hearing. Otherwise, any such petition for administrative review may be filed only to the extent of the changes from the draft to the final permit decision. Petitions to the Environmental Appeals Board must be filed within 33 days following the receipt of the final permit decision and must meet the requirements of 40 CFR 124.19.